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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/773,733	Applicant(s) YOON ET AL.	
	Examiner JOHANNES P. MONDT	Art Unit 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10,13-18,20,21 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10,13-15,17,18 and 20 is/are allowed.
- 6) ☒ Claim(s) 16, 21 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Amendment filed 10/09/2009 forms the basis for this action. In said Amendment applicants cancelled claims 11, 12, 19, 22-24 and 26, and substantially amended all remaining claims 10, 13-18, 20, 21 and 25. Comments on remarks submitted with said Amendment are included below under "Response to Arguments".

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the top edge, the bottom edge and opening, as well as the entire element indicated by reference numeral 21 but (a) described in the specification as the vertical support part 21 of the inner grid spring 20, yet (b) claimed as "two inner support parts". Only the lower two components of said "two inner support parts" have been identified with reference character 21. Yet by admission (see annotated Figure 6, Remarks, on page 12) applicants identify 21 and "two spaced inner support parts" with distinct but abutting portions of the structures that flank the inner grid spring 22, elements 21 being located underneath the "two spaced inner support parts". It is examiner's understanding that both of said two inner support parts consist of three parts, i.e., the lower parts marked 21 in annotated Figure 6 of said Remarks, central parts marked "Two spaced inner support parts" and two parts abutting the latter from above that have not been marked or annotated at all yet. Applicant should provide a Replacement Sheet for Figure 6 in which each claimed element is clearly and uniquely identified by numeral with a corresponding description and numeral in the written support. In addition to the above-

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defined deficiencies of Figure 6 it is noted that the “lateral support elements” and their “the vertical bending lines” of inner fuel rod support part 22 (see claim 25, lines 31+) need a reference character as well.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The following is a quotation from the relevant sections of the Patent Rules under 37 C.F.R. 1.75 that form the basis of the objection made in this office action.

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(1) The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description (see §1.58(a)).

The specification is objected to under 37 C.F.R. 1.75(d) for failing to completely describe in verbal terms what is reasonably disclosed in the Drawings, with reference to the objection to the Drawings as set forth above in section 2. In particular, the “lateral support elements and their “vertical bending lines” should be described with reference to the Drawings, in particular Figure 6.

Claim Objections

3. ***Claim 25*** is objected to because of the following informalities: the wordings “between a first two opposed corners” and “between a second two opposed corners” (claim 25, lines 63 and 65, respectively) should be replaced by “between a first pair of two opposed corners” and “between a second pair of two opposed corners”. In other words, the word “pair” should be inserted in both wordings. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. ***Claims 16 and 21*** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the

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invention. The limitations “*whereby soundness of the spacer grid due to a maximum load caused by cross flows of coolant applied to the vertical support part is provided*” (claim 16, lines 3-6), and “*whereby soundness of the spacer grid due to a maximum load caused by cross flows of coolant applied to the vertical support part is provided, and wherein the spring strength is the ratio of force to displacement in an elastic material*” (claim 21, lines 39-43) fail to have adequate written support in the specification so as to enable one of ordinary skill in the art to practice the invention, because “soundness” in context can only mean “free from flaw, defect or decay”, or “stable” (Merriam-Webster’s Collegiate Dictionary, p. 1123). No spacer grid has soundness, i.e., is sound, *due*, i.e., as a result of, a load of any kind: on the contrary, its soundness is, if anything, challenged by any load on it. Therefore, the limitation “whereby soundness of the spacer grid due to a maximum load...” is logically deficient and physically impossible. New amount of experimentation, including undue experimentation can make up for logical deficiency(see in re Wands factor H, MPEP 2164.01(a)). It is noted that no level of ordinary skill in the art can make up for physical impossibility (in re Wands factor D); that no direction and no examples are provided by applicant to clarify the limitations (in re Wands factors F and G); that the breadth of the claims, the nature of the invention, the state of the prior art are moot considerations where logical inconsistency and physical impossibility are concerned in a limitation that on its own exhibits logical deficiency (in re Wands factors A-C); and that no level of predictability in the art itself can make up for logical deficiency of a limitation in its own (in re Wands factor E).

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Because undue experimentation would be required to practice the invention the claims are not enabled, with reference to MPEP 2164.01(a).

5. ***Claims 21 and 25*** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitations that the guide taps... have an arc-shaped edge “with no point” (claim 21, line 4 from below; and claim 25, line 5 from below) and that “the guide vanes extend to a point” (claim 21, final line; claim 25) and “the guide vanes extend to a rounded point having a shorter radius than the arc-shaped edge” (final sentence of claim 25) lack written support in the specification as originally filed, for the reasons set forth in the prior office action. In response to applicants’ Remarks, clearly, guide taps (58) as illustrated and described have many points. No guide taps with no point are either described in the text or illustrated. That guide vanes “extend to a point” logically means either nothing at all since any physical body extends to a point, or means something specifically with regard to a particular point, while said particular point has not been indicated in the specification. Applicants’ interpretation of “point” seems highly unusual, especially given the phrase “rounded point”. The only conclusion that can be drawn from the Drawings is that the guide vanes and guide taps differ in the radius of the rounding of their edges, which is not within the scope of what is claimed. Therefore, the limitation forms new matter.

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6. **Claims 16 and 21** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitations “*whereby soundness of the spacer grid due to a maximum load caused by cross flows of coolant applied to the vertical support part is provided*” (claim 16, lines 3-6), and “*whereby soundness of the spacer grid due to a maximum load caused by cross flows of coolant applied to the vertical support part is provided*” (claim 21, lines 39-43) fail to have adequate written support in the specification as originally filed. No “soundness” has been defined, but merely “soundness” has been mentioned in general terms as a quality the background art is allegedly lacking. In particular, no “soundness ... due to a maximum load” of anything, including cross flows of coolant has either been identified, nor is said soundness due to a load a logically possible concept within context, because the load does not cause soundness but, on the contrary, challenges it. In conclusion, said limitations form new matter.

7. **Claim 21** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation “*wherein the spring strength is the ratio of force to displacement in an elastic material*”, as claim limitation, is new matter

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because the spring strength has already been introduced, and is now separately related to “an elastic material” that has not been described as such in the specification. To which elastic material is the spring strength additionally related to by additional limitation? The specification is silent on this point.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. **Claims 16 and 21** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The metes and bounds of the claimed invention are vague and ill-defined due to a lack of enablement and due to the introduction of new matter as set forth above in sections 4 and 6, respectively, whereby the claims are rendered indefinite.

9. **Claims 21 and 25** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The metes and bounds of the claimed invention are vague and ill-defined due to the introduction of new matter as set forth above in section 5, respectively, whereby the claims are rendered indefinite.

10. **Claim 21** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The metes and bounds of the claimed invention are vague and ill-defined due to the introduction of new matter as set forth above in section 7, respectively, whereby the claim is rendered indefinite.

Allowable Subject Matter

11. ***Claims 10, 13-15, 17-18 and 20*** are allowed. The following is a statement of reasons for the indication of allowable subject matter: strictly within the context of the invention as recited in independent claim 15, the *combination* of inner strips and perimeter strips is neither anticipated in nor rendered obvious over the prior art of record, with reference to Oyama et al and Yoon et al as cited in the prior Office action as the closest prior art.

Response to Arguments

Applicant's arguments, see Remarks/Arguments, filed 10/09/09, with respect to the rejection(s) of claim(s) under 35 U.S.C. 103(a) have been fully considered and are persuasive when applied to the amended claim language and when viewed in light of applicants' explanation of Figure 6, provided a Replacement Sheet including annotations is provided (see above under "Drawings") and with appropriate verbal description correction (see above under "Specification"). Therefore, subject to compliance with said objections to Drawings and Specification, the rejection has been withdrawn and rejections under 35 USC 112, first and second paragraph, related to the interpretation of Figure 6 have been withdrawn as well. In response to Remarks/Arguments, on page 15, in traverse of the rejection under 35 U.S.C. 112, first paragraph, counter to applicants' statement that Figure 5B shows clearly what is claimed, there only is a quantitative difference in a roundedness of the edges of guide vanes and guide taps, while the claim language recites a qualitative difference in terms of the presence and absence of a point. There is no support for said qualitative

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difference in the specification. The corresponding rejections are thus maintained. Finally, additional new matter and logical inconsistencies were introduced through amendment, with reference to the above rejections under 35 U.S.C. 112, first and second paragraphs.

For the record: Examiner attempted twice to arrange for an interview in order to simplify issues and perhaps arrive at patentable claim language, but although applicants' representative left a voice message after the first phone call, no response was received after examiner's second voice message in response to his.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHANNES P. MONDT whose telephone number is (571)272-1919. The examiner can normally be reached on 8:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack W. Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOHANNES P MONDT/
Primary Examiner, Art Unit 3663